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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/848,933	05/19/2004	Michael Lewis	LLP127US	5697

29393 7590 10/24/2007

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EXAMINER
TRAN, KHANH C

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
10/24/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing@eschweilerlaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/848,933	LEWIS, MICHAEL	
	Examiner	Art Unit	
	Khanh Tran	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,10,11 and 19-21* is/are rejected.

7)☒ Claim(s) *3-9 and 12-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08/15/2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The Amendment filed on 08/15/2007 has been entered. Claims 1-21 are pending in this Office action.

Response to Arguments

2. Applicant's arguments with respect to claims 1 and 10 have been considered but are moot in view of the new ground(s) of rejection.

3. Object of the Drawings has been withdrawn after being corrected for all the informalities.

4. Amendment to the Specification has been reviewed and accepted.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1 and 10 are rejected under 35 U.S.C. 102(a) as being anticipated by FIG. 6 of admitted Prior Art.

Regarding claim 1, in paragraph [0056] of the original disclosure, FIG. 6 illustrates a combined pilot- and data-based frequency and phase tracking system according to the prior art. In paragraph [0024], prior art further discloses that it is desirable to be able to use robust pilot-based tracking near the beginning of the transmission, but to switch over to less noisy, but slower data-based tracking for the remainder of the transmission, using a combined architecture such as that shown in FIG. 6. Further from FIG. 6 prior art, it should be evident that the pilot-based phase estimation block 24 controls the switch-over to data-based tracking system.

Regarding claim 10, claim is rejected on the same ground as for claim 1 because of similar scope.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 11 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidsson et al. U.S. Patent Application Publication No. U.S. 2002/0101840 A1 (previously cited).

Regarding claim 1, Davidsson et al. method and apparatus for determining and/or compensating for a time drift between sample clocks of a transmitter and a receiver in conjunction with transmission of plural modulated signal carriers over an air or radio interface.

In paragraph [0050], FIG. 4 illustrates a radio receiver 30 having a demodulation section 50(4), which utilizes channel estimation unit 112 and preamble directed frequency offset estimation 102, and a timing correction unit 100(4). In paragraph [0054], the timing correction unit 100(4) estimates a timing drift value t.sub.0 and compensates for the timing drift value in the frequency domain by applying an appropriate phase factor to a subcarrier to update the frequency domain channel estimate and thereby provide a time corrected frequency domain channel estimate on line 120 to demodulation unit 114(4). In view of the foregoing disclosure, channel estimation unit 112 and preamble directed frequency offset estimation 102, and a timing correction unit 100(4) provide phase and frequency tracking.

Davidsson et al. does not explicitly disclose the pilot-based tracking unit as claimed in the application claim.

In paragraph [0048], because, in different embodiments, because Davidsson et al. suggests that the timing drift compensation can be performed in accordance with various techniques, example, decision directed frequency offset estimation, or pilot aided frequency offset estimation, therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Davidsson et al.

teachings to employ pilot aided frequency offset estimation and hence the tracking unit is pilot-based.

In paragraph [0080], FIG. 6 illustrates an further extension of FIG. 4 in which a radio receiver 30 having a demodulation section 50(6) which utilizes channel estimation and decision directed frequency offset estimation. Wherein in FIG. 6 embodiment, the demodulation section 50(6) includes a decision directed unit, also referred to herein as decision directed frequency offset estimation unit 150(6). In paragraph [0090], the output subcarrier demodulation unit 114 is remodulated by mapping unit 162 to obtain the remodulated symbols Am[k]. The mapping unit 162 performs the remodulation of the output u[k] by a mapping performed according to the HIPERLAN/2 standard. The remodulated symbols A.sub.m[k] are multiplied by multiplier 164 with the input on line 156 (e.g., the channel estimation H.sub.m[k] of each subcarrier for the FIG. 8 embodiment). In light of the aforementioned disclosure, the decision directed frequency offset estimation unit 150(6) after demodulation unit performs data-based phase and frequency tracking.

As further disclosed in paragraph [0027], because the timing correction unit 100(4) estimates a timing drift value and compensates for the timing drift value in the frequency domain to provide a time corrected frequency domain modulated signal, therefore, the timing correction unit 100(4) is operable to gradually reduce an effect of the pilot-based tracking unit.

Davidsson et al. does not explicitly disclose the timing correction unit 100(4) comprising at least one weighting component operable as set forth in the application claim.

Nevertheless, in paragraph [0082], referring to FIG. 6, Davidsson et al. teaches that decision directed unit 150(6) of FIG. 6 has a second input on line 156(6) from the output of timing correction unit 100(6). And in paragraph [0090], decision directed unit in another embodiment as shown in FIG. 8, the remodulated symbols A.sub.m[k] are multiplied by multiplier 164 with the input on line 156 to produce a weighted symbol estimation $B_m[k]$ on each subcarrier. Because $B_m[k]$ is weighted symbol estimation on each subcarrier, therefore, one of ordinary skill in the art at the time the invention was made would have recognized that the timing correction unit 100(4) provides a weighting component operable to decrease weight factor on each subcarrier respectively.

Regarding claim 11, claim is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 19, claim is rejected on the same ground as for claim 2 because of similar scope.

Admitted Prior Art does not teach a computer program product as set forth in the application claim. However, as common knowledge in the art of digital signal processing (DSP), one of ordinary skill in the art at the time the invention was made would have

been motivated to implement software portions can be loaded in the DSP memory for performing the steps as claimed in the application claim.

Regarding claims 20-21, claims are rejected on the same ground as for claim 2 because of similar scope.

Allowable Subject Matter

7. Claims 3-9 and 12-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Frank et al. US Patent Application Publication No. US 2004/0170227 A1 discloses “Frequency correction for a multicarrier system”.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

Khanh Cong Tran

KHANH C. TRAN
PRIMARY EXAMINER

10/18/2007
AU 2611